SEQUENCE LISTING

<110> Laus, Reiner Gold, Mitchell Madhusudan, Peshwa Pickering, Grant Kylstra, Jelle Rini, Brian Small, Eric <120> Immunotherapeutic Compositions and Methods for the Treatment of Moderately to Well-differentiated Cancers <130> 11311.1002U <160> 6 <170> FastSEQ for Windows Version 4.0 <210> 1 <211> 386 <212> PRT <213> Human <400> 1 Met Arg Ala Ala Pro Leu Leu Leu Ala Arg Ala Ala Ser Leu Ser Leu 10 Gly Phe Leu Phe Leu Leu Phe Phe Trp Leu Asp Arg Ser Val Leu Ala 25 Lys Glu Leu Lys Phe Val Thr Leu Val Phe Arg His Gly Asp Arg Ser Pro Ile Asp Thr Phe Pro Thr Asp Pro Ile Lys Glu Ser Ser Trp Pro 55 Gln Gly Phe Gly Gln Leu Thr Gln Leu Gly Met Glu Gln His Tyr Glu 70 75 Leu Gly Glu Tyr Ile Arg Lys Arg Tyr Arg Lys Phe Leu Asn Glu Ser 90 Tyr Lys His Glu Gln Val Tyr Ile Arg Ser Thr Asp Val Asp Arg Thr 105 Leu Met Ser Ala Met Thr Asn Leu Ala Ala Leu Phe Pro Pro Glu Gly 125 120 Val Ser Ile Trp Asn Pro Ile Leu Leu Trp Gln Pro Ile Pro Val His 135 140 Thr Val Pro Leu Ser Glu Asp Gln Leu Leu Tyr Leu Pro Phe Arg Asn 155 150 Cys Pro Arg Phe Gln Glu Leu Glu Ser Glu Thr Leu Lys Ser Glu Glu 170 Phe Gln Lys Arg Leu His Pro Tyr Lys Asp Phe Ile Ala Thr Leu Gly 185 180 Lys Leu Ser Gly Leu His Gly Gln Asp Leu Phe Gly Ile Trp Ser Lys 200 Val Tyr Asp Pro Leu Tyr Cys Glu Ser Val His Asn Phe Thr Leu Pro

250

235

215

230

245

Ser Trp Ala Thr Glu Asp Thr Met Thr Lys Leu Arg Glu Leu Ser Glu

Leu Ser Leu Leu Ser Leu Tyr Gly Ile His Lys Gln Lys Glu Lys Ser

220

```
Arg Leu Gln Gly Gly Val Leu Val Asn Glu Ile Leu Asn His Met Lys
                                265
            260
Arq Ala Thr Gln Ile Pro Ser Tyr Lys Lys Leu Ile Met Tyr Ser Ala
                                                 285
                            280
His Asp Thr Thr Val Ser Gly Leu Gln Met Ala Leu Asp Val Tyr Asn
                        295
Gly Leu Leu Pro Pro Tyr Ala Ser Cys His Leu Thr Glu Leu Tyr Phe
                                        315
                    310
Glu Lys Gly Glu Tyr Phe Val Glu Met Tyr Tyr Arg Asn Glu Thr Gln
                                    330
                325
His Glu Pro Tyr Pro Leu Met Leu Pro Gly Cys Ser Pro Ser Cys Pro
                                                     350
                                345
            340
Leu Glu Arg Phe Ala Glu Leu Val Gly Pro Val Ile Pro Gln Asp Trp
                            360
Ser Thr Glu Cys Met Thr Thr Asn Ser His Gln Gly Thr Glu Asp Ser
                        375
                                             380
    370
Thr Asp
385
<210> 2
<211> 3089
<212> DNA
<213> Human
<400> 2
agcagtteet ectaacteet gecagaaaca geteteetea acatgagage tgeacceete
                                                                        60
ctcctggcca gggcagcaag ccttagcctt ggcttcttgt ttctgctttt tttctggcta
                                                                       120
                                                                       180
gaccgaagtg tactagccaa ggagttgaag tttgtgactt tggtgtttcg gcatggagac
cgaagtccca ttgacacctt tcccactgac cccataaagg aatcctcatg gccacaagga
                                                                       240
tttqqccaac tcacccagct gggcatggag cagcattatg aacttggaga gtatataaga
                                                                       300
aagagatata gaaaattett gaatgagtee tataaacatg aacaggttta tattegaage
                                                                       360
acagacgttg accggacttt gatgagtgct atgacaaacc tggcagccct gtttccccca
                                                                       420
gaaggtgtca gcatctggaa tcctatccta ctctggcagc ccatcccggt gcacacagtt
                                                                       480
cctctttctg aagatcagtt gctatacctg cctttcagga actgccctcg ttttcaagaa
                                                                       540
cttgagagtg agactttgaa atcagaggaa ttccagaaga ggctgcaccc ttataaggat
                                                                        600
tttatagcta ccttgggaaa actttcagga ttacatggcc aggacctttt tggaatttgg
                                                                        660
agtaaagtct acgacccttt atattgtgag agtgttcaca atttcacttt accctcctgg
                                                                        720
                                                                        780
gccactgagg acaccatgac taagttgaga gaattgtcag aattgtccct cctgtccctc
                                                                        840
tatggaattc acaagcagaa agagaaatct aggctccaag ggggtgtcct ggtcaatgaa
                                                                        900
atcctcaatc acatgaagag agcaactcag ataccaagct acaaaaaact tatcatgtat
tctgcgcatg acactactgt gagtggccta cagatggcgc tagatgttta caacggactc
                                                                        960
                                                                       1020
cttcctccct atgcttcttg ccacttgacg gaattgtact ttgagaaggg ggagtacttt
                                                                       1080
gtggagatgt actaccggaa tgagacgcag cacgagccgt atcccctcat gctacctggc
tgcagcccca gctgtcctct ggagaggttt gctgagctgg ttggccctgt gatccctcaa
                                                                       1140
qactqqtcca cggagtgtat gaccacaaac agccatcaag gtactgagga cagtacagat
                                                                       1200
tagtgtgcac agagatetet gtagaaagag tagetgeeet tteteaggge agatgatget
                                                                       1260
ttgagaacat actttggcca ttacccccca gctttgagga aaatgggctt tggatgatta
                                                                       1320
ttttatgttt tagggacccc caacctcagg caattcctac ctcttcacct gaccctgccc
                                                                       1380
ccacttgcca taaaacttag ctaagttttg ttttgttttt cagcgttaat gtaaaggggc
                                                                       1440
agcagtgcca aaatataatc agagataaag cttaggtcaa agttcataga gttcccatga
                                                                       1500
actatatgac tggccacaca ggatcttttg tatttaagga ttctgagatt ttgcttgagc
                                                                       1560
aggattagat aagtctgttc tttaaatttc tgaaatggaa cagatttcaa aaaaaattcc
                                                                       1620
cacaatctag ggtgggaaca aggaaggaaa gatgtgaata ggctgatggg gaaaaaacca
                                                                       1680
atttacccat cagttccagc cttctctcaa ggagaggcaa agaaaggaga tacagtggag
                                                                       1740
acatctggaa agttttctcc actggaaaac tgctactatc tgtttttata tttctgttaa
                                                                       1800
aatatatgag gctacagaac taaaaattaa aacctctttg tgtcccttgg tcctggaaca
                                                                       1860
tttatgttcc ttttaaagaa acaaaaatca aactttacag aaagatttga tgtatgtaat
                                                                       1920
```

```
1980
acatatagca gctcttgaag tatatatatc atagcaaata agtcatctga tgagaacaag
                                                                      2040
ctatttgggc acaacacatc aggaaagaga gcaccacgtg atggagtttc tccagaagct
ccagtgataa gagatgttga ctctaaagtt gatttaaggc caggcatggt ggtttacgcc
                                                                      2100
                                                                      2160
tataatccca gcattttggg actccgaggt gggcagatca cttgagctca ggagctcaag
atcagcctgg gcaacatggt gaaaccttgt ctctacataa aatacaaaaa cttagatggg
                                                                      2220
catggtgctg tgtgcctata gtccactact tgtggggcta aggcaggagg atcacttgag
                                                                      2280
ccccggaggt cgaggctaca gtgacccaag agtgcactac tgtactccag ccagggcaag
                                                                      2340
agagcgagac cctgtctcaa taaataaata aataaataaa taaataaata aataaaaca
                                                                      2400
aagttgatta agaaaggaag tataggccag gcacagtggc tcacacctgt aatccttgca
                                                                      2460
ttttggaagg ctgaggcagg aggatcactt taggcctggt gtgttcaaga ccagcctggt
                                                                      2520
caacatagtg agacactgtc tctaccaaaa aaaggaagga agggacacat atcaaactga
                                                                      2580
aacaaaatta gaaatgtaat tatgttatgt tctaagtgcc tccaagttca aaacttattg
                                                                      2640
gaatgttgag agtgtggtta cgaaatacgt taggaggaca aaaggaatgt gtaagtcttt
                                                                      2700
aatgccgata tcttcagaaa acctaagcaa acttacaggt cctgctgaaa ctgcccactc
                                                                      2760
tgcaagaaga aatcatgata tagctttcca tgtggcagat ctacatgtct agagaacact
                                                                      2820
                                                                      2880
gtgctctatt accattatgg ataaagatga gatggtttct agagatggtt tctactggct
gccagaatct agagcaaagc catccccct cctggttggt cacagaatga ctgacaaaga
                                                                      2940
catcgattga tatgcttctt tgtgttattt ccctcccaag taaatgtttg tccttgggtc
                                                                      3000
cattttctat gcttgtaact gtcttctagc agtgagccaa atgtaaaata gtgaataaag
                                                                      3060
                                                                      3089
tcattattag gaagttcaaa aaaaaaaaa
<210> 3
<211> 144
<212> PRT
<213> Human
<400> 3
Met Trp Leu Gln Ser Leu Leu Leu Gly Thr Val Ala Cys Ser Ile
                                    10
Ser Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His
                                25
Val Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp
                                                 45
                            40
Thr Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe
                                             60
                        55
Asp Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys
                                         75
                    70
Gln Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met
                                     90
                85
Met Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser
                                                     110
                                 105
Cys Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys
                            120
Asp Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu
                        135
<210> 4
<211> 767
<212> DNA
<213> Human
<400> 4
cggaggatgt ggctgcagag cctgctgctc ttgggcactg tggcctgcag catctctgca
                                                                         60
cccgcccgct cgcccagccc cagcacgcag ccctgggagc atgtgaatgc catccaggag
                                                                        120
gcccggcgtc tcctgaacct gagtagagac actgctgctg agatgaatga aacagtagaa
                                                                        180
gtcatctcag aaatgtttga cctccaggag ccgacctgcc tacagacccg cctggagctg
                                                                        240
tacaagcagg gcctgcgggg cagcctcacc aagctcaagg gccccttgac catgatagcc
                                                                        300
```

```
360
agccactaca agcagcactg ccctccaacc ccggaaactt cctgtgcaac ccagattatc
                                                                        420
acctttqaaa qtttcaaaqa gaacctgaag gactttctgc ttgtcatccc ctttgactgc
                                                                        480
tqqqaqccaq tccaqqaqtq agaccggcca gatgaggctg gccaagccgg ggagctgctc
                                                                        540
totcatqaaa caaqaqotag aaactcagga tggtcatott ggagggacca aggggtgggc
                                                                        600
cacagccatg gtgggagtgg cctggacctg ccctgggcca cactgaccct gatacaggca
                                                                        660
tggcagaaga atgggaatat tttatactga cagaaatcag taatatttat atatttatat
                                                                        720
ttttaaaata tttatttatt tatttattta agttcatatt ccatatttat tcaagatgtt
                                                                        767
ttaccqtaat aattattatt aaaaatatgc ttctaaaaaa aaaaaaa
<210> 5
<211> 144
<212> PRT
<213> Artificial Sequence
<220>
<223> Made in a lab from human amino acids
<400> 5
Met Trp Leu Gln Ser Leu Leu Leu Gly Thr Val Ala Cys Ser Ile
                                     10
Ser Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His
                                 25
Val Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp
Thr Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe
                                             60
                         55
Asp Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys
                                         75
                     70
Gln Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met
                                     90
Met Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser
                                 105
Cys Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys
                             120
Asp Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu
                                             140
                         135
<210> 6
 <211> 767
 <212> DNA
<213> Artificial Sequence
 <220>
 <223> Made in a lab from human nucleic acids
                                                                         60
 cggaggatgt ggctgcagag cctgctgctc ttgggcactg tggcctgcag catctctgca
cccqcccqct cgcccagccc cagcacgcag ccctgggagc atgtgaatgc catccaggag
                                                                        120
qcccqqcqtc tcctgaacct gagtagagac actgctgctg agatgaatga aacagtagaa
                                                                        180
gtcatctcag aaatgtttga cctccaggag ccgacctgcc tacagacccg cctggagctg
                                                                        240
                                                                        300
 tacaagcagg gcctgcgggg cagcctcacc aagctcaagg gccccttgac catgatagcc
 agccactaca agcagcactg ccctccaacc ccggaaactt cctgtgcaac ccagattatc
                                                                        360
 acctttgaaa gtttcaaaga gaacctgaag gactttctgc ttgtcatccc ctttgactgc
                                                                        420
 tgggagccag tccaggagtg agaccggcca gatgaggctg gccaagccgg ggagctgctc
                                                                        480
                                                                        540
 tctcatgaaa caagagctag aaactcagga tggtcatctt ggagggacca aggggtgggc
 cacagocatg gtgggagtgg cotggacotg cootgggcca cactgacoot gatacaggca
                                                                        600
 tggcagaaga atgggaatat tttatactga cagaaatcag taatatttat atatttatat
                                                                        660
```

ttttaaaata ttaccgtaat	tttatttatt aattattatt		tcaagatgtt	720 767